Sectt. XI-27—45,004—14-11-29.

L. S. 8 (1930) Department.

Ms SERIES.

G.O. No. 929 P-H

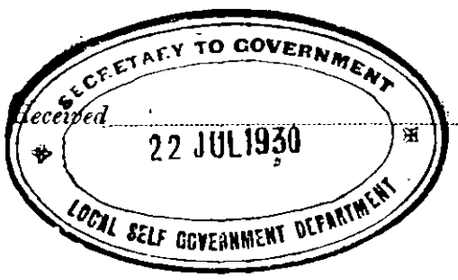
DATED 5. 8. 30

[Despatch Abstract.]

Malaria - Hospet taluk (Bellary District) - Report of the Special Malaria Officer - Recorded and a report of the action taken by the taluk board called for.

C F. 60.

Public Health **DEPARTMENT.**



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Subject.

Malaria survey in Hospet taluk -
Report by the Special Malaria Officer.

ENCLOSURES.
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R. No. 263-1/Mal.

Station Madras . *Dated the* 18th July 192 .

From (Name) Captain N.R. Ubhaya D.P.H.,
(Designation) Ag. Director of Public Health, Madras.

To The Secretary to the Government of Madras,
Local Self-Government (Public Health) Department.

Sir,

pp 2-15 misc

I have the honour to forward herewith the report of the Special Malaria Officer on his survey in Hospet taluk. Popularising quinine distribution and maintaining the channels in a sanitary state are perhaps the possible antimalarial measures in this area.

A copy of the report has been forwarded direct to the President, Taluk Board, Hospet through the President District Board, Bellary for necessary action.

I have the honour to be,
Sir,
Your most obedient servant,

NR Ubhaya
Capt., D.P.H.
Ag. Director of Public Health,
Madras.

GW 2317

PRR.
18-7.

V

Report on antimalarial investigation in certain villages of Hospet taluk.

In April 1929, an enquiry into the incidence of malaria in certain rural parts of Hospet taluk was carried out in the course of a tour of inspection in connection with the working of the scheme of free distribution of quinine (vide report submitted along with letter R.No.96-1/Mal. dated 26th June 1929 from the Director of Public Health). Likewise an arrangement was made in consultation with the District Health Officer, Bellary, for a tour, during last month, in certain other parts of the same taluk for the purpose of studying simultaneously the utility of free distribution of quinine and the extent of malarial incidence. In my report on quinine distribution in this taluk which was submitted recently, I stated that the drug had been becoming more and more popular with the masses and that evidences of its beneficial effects were not wanting. A study of the extent of malarial fevers occurring in any place or places will also serve to gauge approximately the probable quantities of quinine which may be required annually.

2. Before giving a detailed list of villages visited and the observations made, it would be opportune to give a short account of the physiographical and other features of the whole area traversed by me. Hospet taluk forms the northern-most of the "four-western" taluks of the Bellary District. It is connected with the rest of the district on the east and south, while its northern and western sides are bounded by the Nizam's Dominions. Along the whole of its longest ~~—~~ the north-western side, the great Tungabhadra river, which demarcates the boundary line between the Madras Presidency on one side and the Nizam's Dominions, the Bombay Presidency and the Mysore territory on the other, forms its frontier. This river is of great importance in several respects. In the first place, a number of minor anicuts have been thrown across the line of its course at short intervals and water diverted by means of channels for purposes of irrigation; whereby, the belt of country which stretches along the side of the river and extending inland to distances varying from 3 to 5 miles, which, otherwise, would have been quite barren, has been rendered very fertile and productive. Sugarcane is grown very extensively and

the making of jaggery is an important industry, especially round about Hospet and Kampli. Rice which comes next in order is grown mostly for local consumption. The rest of the taluk is largely hilly and the soil gravelly and infertile. Cultivation only of dry crops especially, Cholam, Korra, the mainstay of the villagers, is limited to small stretches of land which are contiguous with hill slopes and which are mostly rain-fed. Tank irrigation is almost negligible except the ayacuts under the Kamalapur, Daroji, Narayanadevakery, and Danayankery tanks which are the only ones worth mentioning. Of these, the tank at Kamalapur is fed by the Roya channel from the Tungabhadra, while the others are strictly rainfed and they get sufficient water only occasionally when the rainfall in their respective catchments is heavy.

3. In the second place, the Tungabhadra is a perennial river, held sacred by the people; and has in its banks a number of villages, almost in continuity. But, unfortunately enough, almost all of them have been in steady decay during the last quarter of a century or more, consequent on the occurrence of malaria which has come to be equally perennial. In this part of its course, it runs through very rugged and hilly tracts, and through regions which are not quite accessible to human beings. The clear pools of water which are left behind on the cessation of floods seem to afford ideal facilities for the breeding of certain species of dangerous anopheles mosquitoes to wit, A. bulicifacies and A. listoni. This river has been noticed to be the most prolific source of anopheles mosquitoes---especially, for the two species mentioned above---which also seem to flourish best in waters. The sweetness of the water of the Tungabhadra has been a matter of common knowledge to all; and "to bathe of the waters of the Ganges and to drink of those from the Tungabhadra" has been proverbial for ages. Whether it is the sweetness or the physico-chemical properties that contribute towards the selective prefefence of certain species of anopheles mosquitoes to breed in the bed of the Tungabhadra river should appropriately form a subject for scientific enquiry. It is not the Tungabhadra river alone that is the offender, but its water as it runs along the channels which take their origin from the river, equally contributes to the propogation of these species of anopheles mosquitoes. For, investigation has shown

that there is scarcely a village or hamlet which is situated in close proximity of these channels and which is free from endemic malaria — great or small.

4. Other than the Tungabhadra, there are no bigger streams in the taluk. The many smaller ones which are scattered about serve the purpose of carrying off all rain water as rapidly as it falls on the ground. Consequnetly they go dry within a week or two after the cessation of rains--although comparatively speaking, Hospet taluk gets more rain than the other parts of Bellary district. The months of heaviest rainfall are August and September. For nearly 9 months preceding the first onset of monsoon rains, the country-side is as dry as dust--and it is very exceptional to receive any showers during this period. The heat, therefore during the day is somewhat unbearable; the nights are always cool and pleasant, and from November to February one enjoys a genuine cold weather, the temperature at night often falling below 55' F. Hospet like the rest of the district is considerably the driest of all the places in the Presidency. Step-wells and draw-wells are the main sources of water supply for domestic use.

5. Agriculture is the mainstay of the entire population except for a few landlords or bigger ryots, living in the larger towns such as Hospet, Kamlapur, Kampli, and Narayanadevakery. The village folk in general are very backward both socially and economically. The average ryot is poor and for his food supply, he has to depend upon the rains in September to December. He is inferior to his brethren in the south in almost every respect— his house, his land, property or even intelligence and capacity.

6. I now give a brief description of the villages visited along with the results of the malaria survey carried out at each place.

(i) . Kamalapur was visited last year and again this year. The tank was only half full and agricultural operations had not begun. Fevers have been less severe during 1929 than in 1928. It is reported that the population is steadily going down. The President, Union Board has been able to clear the village of a fair amount of prickly pear which is used for filling in pits.

Kamalapur.	No. of children examined for enlarged spleen.	No. with enlarged spleen.	Spleen rate.	No. of smears taken.	Number infected.	Rate.
(1930.)	107	41	38	21	3	14.2
In. 1929.		45%				30%

Vital statistics.	1929.	1930.
Births.	135.	66
Deaths.	134.	83.

(ii) Kurudugedda,- a village steadily going down on account of malaria. The anicut is built across a small branch of the Tungabhadra which runs on the east, the main river lying to the west about 4 furlongs beyond.. The place is very highly malarious. But quinine is very popular and the local Jagirdar has been able to induce many sufferers to depend upon the efficiency of this drug. Out of 55 children examined, 39 showed enlarged spleen: and the size of the spleen in 26 children was 2 fingers or more below the costal margin. 38 blood smears were examined but 2 were found infected with malaria parasites, mostly of the quartan variety.

(iii) Basapuram: about 6 miles from Hospet and a mile from Kurudugedda. The channel runs on west and wet cultivation is spread on the northern and eastern sides of the village. The smaller channels are very ill-kept and plenty of water overflows from the banks lower down.

37 children were examined and 23 had their spleens enlarged which is equal to 62%. 32 smears were examined and 4 showed presence of malarial parasites. (12.5%). One blood smear from an adult female complaining of fever was negative.

(iv) Gowripur about 4 miles to west of Hospet; a road-side village.- has a small stream which receives the overflow from Danyankery, but it was almost dry. Only 10 out of 48 children showed enlarged spleen and 7 out of 21 smears were found to contain malarial parasites. 2 cases of actual fever are included in the above.

(v) Chilkanahatti - is about 16 miles south-west of Hospet on the road to Kudligi. It has a small tank which gets water occasionally during a year of heavy rainfall. It is almost a dry interior village of very little importance: only 4 out of 33 children had each a spleen which was merely palpable. 12 smears were examined out of which 1 was found infected.

(vi) Nagalapuram is a fairly big village in the middle of a dry country about 6 miles to the east of Ramandrug range of hills. There is a small

tank with an ayacut of 112 acres. The place can be said to be free from malaria. 36 children were examined but only 3 showed slight enlargement of spleen. 6 smears from children who showed splenic enlargement or complained of fever were examined, but none of them was found infected.

(vii) Haravanahalli may also be taken as malaria-free, although sporadic cases are reported. It is situated about half a mile from Chilkanahatti. 43 children were examined and only 4 showed splenic enlargement.

No. of slides examined.	9
No. infected.	2

In 1929 there were only 6 births and 8 deaths.

(viii) Gollarahalli midway between Chilkanahatti and Nagalapuram has a small tank which was dry. On the way a small surface spring with a rectangular stone revetment was encountered. The few anopheles larvae which were collected there happened to be those of A. subpictus.

No. of children examined for spleen.	40.	
No. with enlarged spleen.	16	or 40%.
No. of blood smears examined.	21	
No. infected.	4	or 19%

During 1929 there were 30 deaths as against only 10 births and this is explained to be due to the occurrence of Plague.

(ix) Tali-Basapuram is a petty village about 3 miles to west of Chilkanahatti. A small stream runs between the two places but it is generally dry except for a few days after the rains. 3 out of 20 children had the spleen enlarged. 12 smears were examined but none was found to contain malaria parasites.

(x) Tanda, a hamlet of Tali-Basapuram is a fairly big village where a class of people called Lambadies live. The village is built on quite an open piece of country and appeared least infected with malaria. All the four out of the 98 children examined who gave evidence of enlarged spleen were grown up boys between 10 and 12 years of age. These are a class of migratory people.

18 blood smears were examined and 1 showed the presence of malarial parasites.

(xi) Narayanadevakery is a fairly big Union town which owes its importance on account of the temple and tank from which it derives its name. It is a place of commercial importance having trade

relations with parts of Mysore and Bombay. The main town may be taken as free from malaria but the outskirts nearer the wet fields and the small hill on the north-east where the Adi Dravidas and other poor people live shows some amount of infection. In the main town, of the 55 boys and 33 girls that were examined, only one boy had his spleen enlarged: whereas in the outskirts out of 109 children of the poorer classes, 29 showed signs of enlarged spleen. From amongst the latter, 27 blood smears were taken and examined and 2 were found infected.

(xii) Anivery, a small village close on the banks of channel from the Tungabhadra river is so highly malarious that it is very rapidly getting depopulated. The inhabitants of the remaining 10 or 15 houses have proposed to shift to another site, which is only about 4 furlongs to the south. It is desirable that a more suitable site well beyond the danger line should be selected. All except 9 out of 38 children examined had the spleen enlarged and in nearly 60% of them, the size of the spleen was three fingers breadth or more. 27 adults were examined as well, and 13 of them had enlarged spleens. 29 blood smears of children were examined and as many as 10 were found to contain malarial parasites. The Quartan parasite was the predominating variety, it being found in as many as 8 smears. This village is obviously the worst infected and unlike in Kurudugedda, people have not been taking quinine freely, although it is available with the village munsiff.

(xiii) Aralihalli, in contrast, has less infection, the people having moved some 10 years ago, from their original houses close on the channel to the present site which is about a mile interior. 14 out of 59 children were found to have enlarged spleens; and 14 smears were examined, out of which 2 were found infected with malarial parasites.

(xiv) Harehalli which is 1 mile to the east of the above and from the channel on the north, was reported to be non-feverish. Quinine pills have been available with the village munsiff and people are taking advantage of it. Fever cases appear to occur in sporadic form. 5 out of 21 children had enlarged spleen and 2 smears out of 13 examined contained malaria parasites.

(xv) Nandi-banda which is about 3 miles south-east of Narayanadevakery and which is situated close to a small jungle stream was found to be

very highly malarious, in contrast to Ayanahalli lying in more open country about 2 miles more in the interior towards the east. The following is the result of examining children:

Nandibanda

No. of children examined for spleen.	38	
No. with enlarged spleen.	22	or 60%.
No. of blood smears examined.	21	
No. infected.	4	or 19%

Ayyanahalli

No. of children examined for spleen.	43	
No. with enlarged spleen.	7	or 16%
No. of blood smears examined.	11	
No. infected.	Nil.	

(xvi) Mudlapuram, a suburabn village within the Union limits of Kampli has a big channel and cultivation of sugarcane and paddy right round on all sides. 17 out of 60 children showed enlarged spleen. 16 blood smears were taken and examined, and none was found infected.

(xvii) The figures of births and deaths during 1929 are 55 and 41 respectively.

(xviii) Ramasagar about 4 miles from Kampli on the road to Kamalapur is at the foot of a low range of hills. From the general appearance of the country-side with the hills on the south-west and the Tungabhadra channels on the north and north-west closely, one would be inclined to take it as an high endemic centre for malaria But the spleen rate found at the time of our examination is only 16.6% (13 out of 72 children).

Some of the villagers said that they had experienced a very severe outbreak of fevers about two years ago following heavy rains, which is likely, judging from the fact that splenic enlargement was found mostly in boys between the ages of 10 and 12 and none in the younget children under 4 years of age. In 1929 there have been 68 deaths as against 68 births. 21 smears were examined and 3 contained malaria parasites.

57. In the Gadiganur Revenue Firka, 9 villages including Gadiganuru were visited. Broadly speaking the physio-graphical features of all the villages except Joga were identical. There are no perennial streams or surface springs. Dry cultivation is the rule except for a very few acres of wet land under a small tank. Narehalli is an important feeder channel of Daroji tank

which, coming from the Sandur state on the south, skirts round along the eastern side. It generally goes dry except for 4 to 6 weeks during and after rains and malaria is not severely prevalent even in villages lying close on its banks. Fever, if at all, appears to be seasonal and occurs between October and December. The following statement gives details of spleen and blood examination:--

Village.	No. of children examined for enlarged spleen.	No. with enlarged spleen.	Spleen rate.	No. of smears taken.	Number infected.	Parasite rate.
Gadiganur	88	3	3	5*	1	20%
				*2 reported fever and spleen.		
Movanahalli.	55	3	5	5	1	20%
Dharmasagar.	27	2	7			
Byluddageri	41	11	27	15	1	6.6
Gundlavadageri	37	7	19	14	..	..
Kakubal.	70	7	10	17	2	11.7
Talur.	102	9	9	—	—	
Kotiganhal.	28	4	14	—	—	—

only select children Examined for blood parasites

Joga, a small village inhabited solely by Lingayats and the Agricultural labourers working on their lands, lies very much in the midst of a very hilly country about 10 miles from Gadiganur. It was an agreeable surprise that in the midst of such a hilly country, the evidence of malarial endemicity was so slender that 4 only out of 49 children had each an enlarged spleen, but they were all between the ages of 10 and 12 years. The apparent explanation appears to be that except for the few days during and after the rains, the whole area gets absolutely dry: and unlike in other similar hilly parts there is a complete absence of perennial streams or natural springs. 12 blood smears were examined and the number infected among them was only 1.

8. In Tornagal firka which is almost wholly hilly, only one village namely Nagalapuram, which is situated on the left bank of Sarehalla was visited. Even here the incidence of fevers seems to be seasonal and sporadic. 68 children were examined and 7 showed enlarged spleen. (10.3%). No other villages could be inspected, as it was reported that they were almost like Joga and malaria incidence was not severe.

9. With regard to the anopheles fauna present in the area under

consideration, the season seemed to be ~~EN~~wholly unfavourable. All the hill streams and nullahs were absolutely dry. Agricultural operations had not commenced and ryots had just been transplanting sugarcane seedlings; and preparations were further being made for sowing groundnut or other seeds. The flow of water in the river channels was intermittent and the only species of anopheline that was found in the small pools of muddy water here and there were the larvae of A. subpictus, as at Hospet. There had been a few showers of rain during the week or 10 days prior to my visit; but the water left behind had gone dry every-where. The only places where a large number of larvae of A. culicifacies and a few more of A. listoni were found, was the small arm of the Tungabhadra river below the anicut at Kenchinagudda. Here are large numbers of clear pools in the rocky bed free from fish or other natural larvicides and anopheles larvae thrive very well in them.

10. It seems opportune now to collect all the data obtained from the examination of children and their blood smears in one statement as is found in appendix I.- for the purpose of interpreting their significacnce.

It may be said at once that the time of investigation corresponded to a season of what one may call 'quiescent malaria' in which few people suffer from acute attacks of fevers, while few others may harbour in their blood a small number of parasites not surficient to produce active symptoms (latent malaria). The spleen and parasite rates worked out may be taken as what one expects to find during years of normal conditions of rainfall, temperature and freedom from disturbing events such as famine, drought or sudden outbreaks of malaria or other fevers.

11. Even at a single glance, one can easily notice from the statement that malaria is hyper-endemic, firstly, in the villages which are situated close to the river Tungabhadra and next in those which are in close proximity of its channels. Kurudugadda is an example for the former and Anivery for the latter. The high spleen rates, the big and often hard average enlarged spleen extending to 2 finger-breadths or more below the costal margin, the great percentage of slides showing presence of malaria parasites, and the comparatively speaking, large incidence of quartan

fever (Laverama malarae)---all these point to the presence of 'static' or hyper-endemic malaria in these places.

/2. In Kurudugedda however the number of blood smears showing parasites is proportionately smaller than that in Anivery, although the spleen rates are almost the same in both the places. The characterisitc difference may be explained by the fact that quinine which effectively controls the incidence and duration of bouts of fever, is in greater demand and use in the former than in the latter place. Basapuram is another village where the spleen rate is 62%, the parasite rate is 12.5%. But here again people have not got sufficient faith in the efficacy of quinine, although they could take a lesson from Kurudugedda which is only a mile distant from it. In Kamalapuram near Humpi, the endemicity of malaria as judged by the spleen and blood examinations carried about the same time of the year 1929 and now, is more or less the same. But both the President, Union Board and the Rural Medical Officer report that there is a noticeable decrease in the number of fever cases occurring in the centre of the village where quinine is in greater demand amongst the more enlightened residents than in the outskirts where the ignorant labouring classes are averse to take it in spite of special efforts made by them. In contrast, one can quote Ramasagaram where the conditions are more or less identical with those in Kamalapuram and where malaria is less endemic and the obvious answer seems to be that quinine again is more popular there than in the latter place. It may however be much too premature to dogmatise on this matter, unless a longer trial is given to judge of the utility of quinine where it is in demand.

/3. In regard to the other and more interior places one can say in general terms that malaria is more in evidence in places which are in close proximity to jungle streams or nullahs than those lying in flat open country with little or no natural collections of water around. The best example to quote in support of such a statement is Nandibanda which is very much more malarious than Ayyanahalki as stated already. Broadly stated one can say with a fair amount of certainty that malaria is in greater evidence and sometimes more severely prevalent in village which lie in the vicinity of thick groves and clusters of palmyra or date trees than in those which are situated in more open tracts. The existence of such groves in clusters scattered about in an almost arid stretch of land predicates the existence of natural collections of

water in semi-permanent streams or channels which would give the required nidus for the propogation of dangerous anophelines.

14. Contrary to expectations, malaria does not appear to be a significant problem in the hilly tracts near Gadiganur and Tornagallu. They are the most sparsely populated, have the least amount of forest - but the largest extent of arid desert and barren rock. Having a good slope, water hr seems to drain off as quickly as it reaches the surface and in the absence of perennial streams or natural springs, malarial infections may not survive even if introduced. Nevertheless, few cases of enlarged spleen were found at Joga but only in boys between the ages of 9 and 12 years and none in younger children, which would go to indicate the absence of recent or endemic malaria.

15. Recommendations: Considering the small number of the villages, the still smaller number of people in the taluk, the absence of natural streams and nullahs which are perennial except those in relation to the Tungabhadra river and its channels, it is problematical whether any scheme for organising permanent antimalarial operations would be either practical or economical. For one thing, malaria is only seasonal except in the tract of country lying in the Tungabhadra valley, and its incidence depends upon the quantity and duration of rainfall; for a second thing, the villages are much too small and scattered about for any measures for common benefit. For these reasons, in the case of the villages which lie in the interior well away from the Tungabhadra river and channels and from the bigger towns, the remedy seems to lie in improving their general sanitary environment by preventing the excavations of pits and the making of quarry holes in close vicinity, and by popularising the use of quinine amongst the village folk. There is no reason why these villages could not be rendered malaria free if only the people put more faith in the efficacy of quinine and swallowed it regularly and judiciously. The timely sterilising their blood of malaria parasites would go a long way in preventing infection of the local anopheles mosquitoes and thereby the spread of fevers. The efforts of the local authorities may with great advantage be concentrated in such directions.

/b. The villages lying on or in close proximity to the Tungabhadra river and its channels fall in different category. The river is there and the channels have also to be there, if the people have to grow their food and procure their means of sustenance. These water courses cannot be rendered innocuous from the breeding of dangerous anopheles mosquitoes, although it may be possible to deal with the channels to a certain extent but only at heavy cost. It thus becomes a question of the Mountain and Mahomed and in as much as the river and the channels cannot be moved, the only alternative is to move the villages and thereby the people from their vicinity. The people themselves have learnt from long suffering and experience that it is, on the whole, safer to move to newer sites than die in their old death-traps. But in doing so, they have invariably made the greatest blunder of moving to a place which is not more than a furlong or two from their old houses as in Kenchanaguddam in Siruguppa taluk. They have not been conversant with the mosquito theory of malaria nor with the powers of flight of mosquitoes. But unfortunately these village folk would feign believe in such new 'fads' but would rather be content to lay faith in the fevers being caused by drinking water from a particular source or other or by some evil spirit. The majority of them will refuse to move to sites beyond their original village 'Nattam.' For instance, the villagers of Anivery have agreed to move away from their old village which is almost in ruins. The Taluk Board has proposed to acquire a site for them, but the site shown is barely half a mile from the channels and the fields thereunder. The villagers object to various other sites on the ground of distance or other pretext and they refuse to move to any site outside their village boundary. Similarly the villagers of Kurudugadda want to move to a new site which is about 3/4 mile from the old one towards the south but only about 2 or 3 furlongs from the anicut area. It would be sheer waste if the fixing of new sites for badly suffering villages, should be within easy flying distance of anopheles mosquito. From the conditions present I would recommend that for purposes of safety no new site for any affected village should be within <u>at least</u> one mile distance from the bed of the river, the anicut, the channels or even the fields under their ayacuts; and wherever possible, the site of election may be further beyond this distance of one mile: but in no case should

it be less than one mile.

17 I doubt if any other permanent measure of relief will answer the purpose. In the meantime the quinine policy will have to be more broadly advertised and more intensively applied than hitherto. Quinine will assuredly bring quick, though somewhat temporary relif to the actual sufferer and if judiciously administered help in checking relapses and preventing the more severe or malignant type of malaria. Above all, it effectively controls the incidence of fevers in infants and young children and thus it contributes to the lowering of infant and child mortality.

18. With regard to the bigger towns, it is quite possible to undertake antimalarial operations at reasonable cost. The solution for instance at Narayanadevakery appears to lie in filling up or draining the numerous pits and depressions in the slopes and the foot of the hillock at the north-east of the town adjoining the Madiga quarters. Likewise the control of malaria at Kamalapuram may be effected by filling in all pits etc. in the vicinity of the town round about and in clearing the irrigation channels of weeds etc. within the town precincts. It would however be desirable to pay a visit in November and December when it is understood the malarial season will be at its worst for the purpose of exactly incriminating the danger spots. To improvise measures to arrest the spread of malaria in its present position at Kamalapuram is to my mind a more practical and possible step than to think of moving the village to another site. There is a rural medical practitioner at the place who will very gladly undertake the work, if he is promised a small remuneration of say, Rs.15/- or 20 per mensem.

19. To summarise:

(1) Malaria is hyper-endemic in all the villages which are situated close on the bank of the Tungabhadra river or its several anicuts--as in Kurudugadda or Hosur. This has been the experience in other villages.

(2) Malaria is equally hyper-endemic or only slightly less so in villages which lie in the vicinity of the river channels and the fields under their ayacuts.

Briefly put, the severity of the disease is in inverse ratio to the distance of the village or villages from either the river

or its channels: and most likely the infection runs all through the year to a smaller or greater extent in all of them.

(3) In the case of other villages, malarial incidence has a direct bearing to the proximity of perennial or quasi perennial natural streams or channels; but in such places the disease, being directly influenced by the amount and duration of rainfall, is mostly seasonal, corresponding to the late winter and autumn months.

(4) In almost all the villages in Hospet taluk, malaria occurs in sporadic form or in transient outbreaks and the possible chances of serious outbreaks when sufficient numbers of human carriers accumulate and the climatic and seasonal conditions for the propogation of suitable carrier-anopheles mosquito are also available, should be borne in mind.

(5) In the case of bigger towns, malaria is largely man-made due to human improvidence which tends to create facilities for the breeding of dangerous anopheles in pools and quarry holes and in neglected irrigation channels or other water courses.

(6) The solution of the problem in the case of (1) and (2) above seems to lie in shifting existing villages to sites well beyond the danger line which should on no account be within the distance of at least one mile from the river or the channels.

(7) In the case of (3) and (4) the authorities of the Local Board and health officials must be in a state of watchful expectancy as they do in the case of other epidemic diseases and promptly take relief measures, if the disease shows signs of spreading wildly.

(8) In the case of (5) the Union authorities can with the assistance of the District Board, if necessary, take suitable antimalarial measures sufficiently in advance of the expected seasonal outbreak annually. The period of active work will most likely be from early September to about the end of the following December or January.

(9) In any case the scheme of free distribution of quinine should not only be extended to every village but it should be made a permanent feature of Public Health administration in the taluk.

In conclusion, I am to thank the District Health Officer for all the assistance he rendered in carrying out my work.

8.7.30

B.A., M.B.C.M., D.P.H.(Camb).,
Special Malaria Officer, Madras.

PPR.
30-6.

Appendix/XI.

Hospet Taluk.

Name of Place.	Spleen rate.	Parasite rate.
Kurudugadda.	70.0	5.2
Basapuram.	60.0	12.5
Gollarahalli.	40.0	19.0
Nagalapuram.	8.3	--
Chilkanahatti.	12.1	8.3
Haravanahalli.	9.3	22.2
Tanda.	4.0	5.4
Tali-Basapuram.	15.0	--
Gowripur.	20.8	33.3
Aralihalli.	23.7	14.3
Tarehalli.	24.0	15.4
Anivery.	76.3	34.5
Narayanadevarakery.	14.6	7.4
Nandibanda.	60.0	19.0
Ainahalli.	16.3	--
Kamalapuram.	38.3	14.2
Maddapuram.	28.3	--
Ramasagaram.	16.6	14.2
Kovanahalli.	5.8	20.0
Gadiganuru.	3.4	20.0
Dharmasagaram.	7.4	--
Kyluddugeri.	26.8	6.6
Gundlavadgeri.	19.0	--
Makubal.	10.0	11.7
Joga.	8.2	8.3
Talur.	9.0	--
Nagalapuram.	10.3	--
Kotiganahal.	14.0	--

Appendix II.

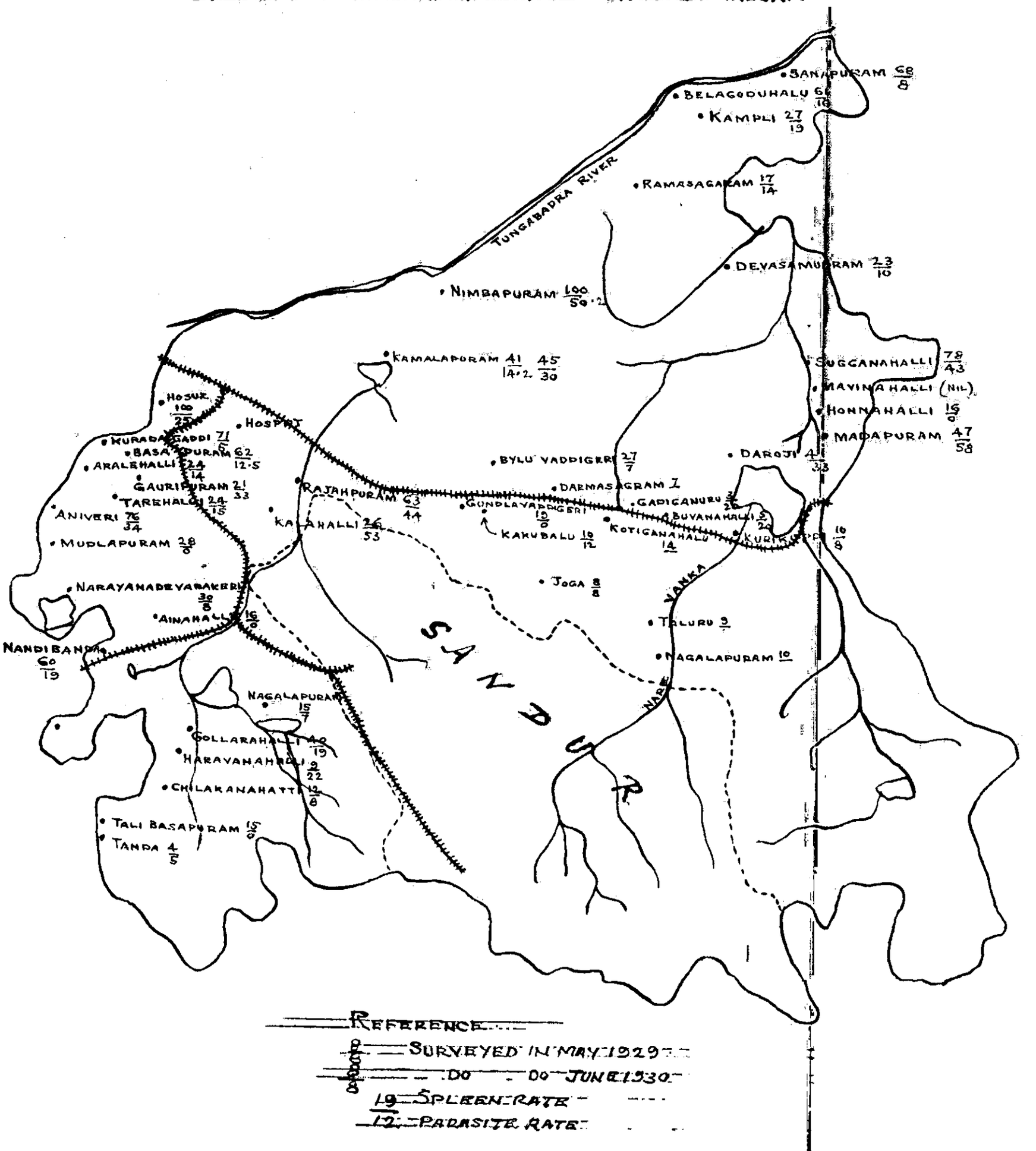
Name of place.	No. of children examined for spleen.	No. with enlarged spleen.					Spleen rate.	Average spleen.
		V_0	V_1	V_2	V_3	V_4		
Hospet.	488	383	52	37	11	5	23.1	.37
Kurudugedda.	55	16	13	11	9	6	70.0	1.50
Basapuram.	37	14	5	7	7	4	62.0	1.50
Gollarahalli.	40	24	6	6	4		40.0	.75
Nagalapuram.	36	33	1	2			8.3	.13
Chilkanahatti.	33	29	4				12.1	.10
Haramanahalli.	43	39	1	2		1	9.3	.21
Tanda	98	94	4				4.0	.04
Talibasapuram.	20	17	1	1		1	15.0	.35
Gauripuram.	48	38	4	2	4		20.8	.50
Aralehalli.	59	45	4	7	3		23.7	.45
Tarehalli	21	16	2	2	1		24.0	.43
Anivery.	38	9	2	6	8	11 2	76.3	2.40
Narayanadevarakery	88							
,, Panchamas.	109	80	29				27.0	.27
	197	168	29				14.6	.14
Nandibanda.	38	16	6	9	4	3	60.0	1.26
Ainahalli.	43	36	4	2	1		16.3	.25
Kamalapuram.	107	66	20	10	6	5	38.3	.73
Mudlapuram.	60	43	12	4	1		28.3	.40
Ramasagaram.	72	59	4	5	4		16.6	.33
Buvanahalli.	55	52	3				5.75	.05
Gadiganuru.	88	85	3				3.40	.02
Dharmasagaram.	27	25	1		1		7.40	.15
Byluddugeri.	41	30	4	2	4	1	26.80	.70
Gundlavadgeri.	37	30	6	1			19.00	.21
Kakubal.	70	63	4	1	2		10.0	.17
Joga.	49	45	1	3			8.2	.14
Talur.	102	93	4	3	2		9.0	.15
Nagalapuram.	68	61	6			1	10.3	.14
Kotiganahal.	28	24	1	3			14.0	.25
Total.	2098	1653	207	126	72	38 2	21.2	1.88

Hospet ~~Malaria~~ survey findings.

Name of place.	No. of smears taken.	Number infected.	Rate.	Species of parasites. M.T.	B.T.	Q.	Mixed.
Hospet town.	124	18	14.5	7	1	9	1
Kurudugadda.	38	2	5.2	1		1	
Basapuram.	32	4	12.5	1		3	
Gollarahalli.	21	4	19.0	1	2	1	
Nagalapuram.	6	-	-				
Chilkanahatti.	12	1	8.3			1	
Haravanahalli.	9	2	22.2	1	1		
Tali-Basapuram.	12	-	-				
Tanda.	18	1	5.4		1		
Gowripur.	21	7	33.3	2	1	3	1
Aralihalli.	14	2	14.3			2	
Anivery.	29	10	34.5	1		8	1
Tarehalli.	13	2	15.4			2	
Narayanadevarakery.	27	2	7.4	1	1		
Nanditanda.	21	4	19.0	2		2	
Ainahalli.	11	-	-				
Kamalapur.	21	3	14.2			3	
Mudlapuram.	16	-	-				
Ramasagaram.	21	3	14.2	1		2	
Buvanahalli.	5	1	20.0	1			
Gadiganur.	5	1	20.0	1			
Byluddugeri.	15	1	6.6	1			
Gundlavadgeri.	14	-	-				
Kakubal.	17	2	11.7	1	1		
Joga.	12	1	8.3			1	
Total.	535	71	13.3	22	8	38	3

(Of the 22 M.T., 9 were those of ringsforms and 13 crescents. Of the 8 B.T., 6 were rings and 2 gametocytes. Of the 38 quartan, 15 were purely ring forms, 9 gametocytes and rings mixed and 14 purely gametocytes.)

SPOT MAP OF MALARIA INCIDENCE — HOSPET TALUK.



REFERENCE

SURVEYED IN MAY 1929

DO DO JUNE 1930

19 SPLEEN RATE

12 PARASITE RATE

No. V 0/1 H.S.G. (P.H.) Dept.

Cir.: 2588 XI from the D.P.H. R.No. 263-1 Mal. 9)
dt: 18/9/30.

Subject:

Malaria Survey: Hospet taluk:

D.F.

f. 1-6 (K) In June 1929, the D.P.H. ordered a Report for Malaria Survey by the S.M.O. in certain villages of Hospet taluk. He has now forwarded a Copy of the report on malaria survey in certain other parts of the same taluk. The report under reference shows that (1) malaria is hyper-endemic in the villages which are situated close to the river Tungabhadra and next (2) next to those which are in close proximity of its Channels (3) In regard to other places malaria may be is more or less evidenced in places which are in close proximity to jungle streams or nullahs than those

f. 14-15 f. being in flat open country with little or no natural collections of water around.

For (1) and (2) it is recommended that existing villages should be shifted to sites well beyond the danger line which should on no account

within the distance of at least one mile from the river or the Channels. For

(3) it is suggested that the local boards concerned and officers of the Health Dept should take precautionary measures in advance of the expected seasonal outbreak annually.

4. In forwarding the report the DPH states that propaganda quinine distribution and maintaining the Channels in a sanitary state are perhaps the best anti malarial measures in this area. A copy of the report has been sent to the PWD Hospet for necessary action. If the local board applies for a grant in respect of anti malarial measures, it may then be considered. No detailed estimate cost is given in the report. The PWD may be asked to submit a detailed report by 1st Nov 1930 of the anti malarial operations carried out. A draft order is submitted for approval.

Recommended

pt. of

30/7

Ag 4/8

Needs 3/8

3/8/30

Sectt. II-5(a)—50,606—5-11-29.

89/A/5. 22

L & G (P.H) DEPARTMENT.

	Date.	Initials.
When received for Fair-copying.		
When copied ..	5/8	
When examined ..		
When signed ..		5/8
When despatched ..		

Subject

Malaria - Hospet taluk (Bellary Dt)

Report of the Special Malaria Officer recorded and a report of the action taken by the taluk Board called for.

READ AGAIN G.O. No. ....., dated ..... 19 .

" " " " ..... " 19

READ ALSO :—

C. No. 2582 From the D.P.H., No. 263-H, dated 6/8 1930.

" " ..... " " ..... " ..... " ..... 19 .

" " ..... " " ..... " ..... " ..... 19 .

ORDER.

No. 1929 P.H, dated 5781 1930.

Mis

Recorded.

Y. Dee P.D.B. Bellary Hospet is requested to submit by 1st ~~report~~ 1930 a report on the action taken by the local boards concerned on the recommendations of the Special Malaria Officer in his report (28.7.30) on anti malarial investigation in certain villages of Hospet taluk, a copy of which has already been forwarded ~~by~~ to the ~~D.P.H~~ P.T.B. Hospet Hospet for P.D.B.

31.7.30.

4/8

Dept ...

Dpt's. routinde 8/8

Date 6/8/30

To the D.P.H

" P.D.B. Bellary.

" P.T.B. Hospet through the D.B. Bellary